The impact of a virtual teaching assistant (chatbot) on students' learning in Ghanaian higher education

Abstract

Chatbot usage is evolving rapidly in various fields, including higher education. The present study's purpose is to discuss the effect of a virtual teaching assistant (chatbot) that automatically responds to a student's question. A pretest–posttest design was implemented, with the 68 participating undergraduate students being randomly allocated to scenarios representing a 2 × 2 design (experimental and control cohorts). Data was garnered utilizing an academic achievement test and focus groups, which allowed more in depth analysis of the students' experience with the chatbot. The results of the study demonstrated that the students who interacted with the chatbot performed better academically comparing to those who interacted with the course instructor. Besides, the focus group data garnered from the experimental cohort illustrated that they were confident about the chatbot's integration into the course. The present study essentially focused on the learning of the experimental cohort and their view regarding interaction with the chatbot. This study contributes the emerging artificial intelligence (AI) chatbot literature to improve student academic performance. To our knowledge, this is the first study in Ghana to integrate a chatbot to engage undergraduate students. This study provides critical information on the use and development of virtual teaching assistants using a zero-coding technique, which is the most suitable approach for organizations with limited financial and human resources.